

you would find it useful always to use the clearing solution and the sulphocyanide and gold solution in your usual process.

“(Signed) WILLIAM CROOKES.”

1900 July 6.

On the near Approach of the Planet Eros to a Star
(B.D. +48°, 759). By F. A. Bellamy.

The planet *Eros* is under regular photographic observation at the University Observatory, Oxford, for determining the parallax.

The plan of work adopted is to get several exposures as soon after sunset and as soon before sunrise as possible. It may be of interest to give a summary of plates at present taken. Fifty sets of exposures, either evening or morning, have been secured with an aggregate of 205 exposures, varying from 10^m to 30^s; on ten occasions pairs of parallax plates have been obtained (evening and morning). Since October 31 the weather has been very unfavourable, and only two plates have been exposed. All images of *Eros* and all the stars in the A.G. Catalogues of Harvard and Bonn which come within the area of the plates have been measured, and many of the plate constants determined provisionally. On October 12 the sky was thickly overcast until 8½ P.M. I came out of the Observatory a few minutes later and noticed a break in the clouds in the west, and decided to get the instrument ready in case a fine interval should come over; by 8.45 the sky was almost cloudless, and I secured 10 exposures on plates 1632 and 1633 within the next 50 minutes; 10 minutes later the sky was completely cloudy and remained so.

The chief point of interest in these two plates is the proximity of *Eros* to a star, since identified as B.D. +48°, 759. From the first to the fifth exposures the angular distance decreased, the planet moving north and west, until at the sixth and seventh exposures the images of star and planet are confused (see diagram, p. 18). The following measures were made by myself, using one of the Astrographic Catalogue measuring instruments, the unit adopted being 1 réseau interval of 5'.

Plates 1632 and 1633 Exposed 1900 Oct. 12. R.A. 2^h 42^m + 49°.

Exp.	Mag.		Eros <i>x</i>	★ <i>x</i>	Eros—★.	Eros <i>y</i> .	★ <i>y</i> .	Eros—★.	Oxford Sid. Time of Middle of Exposure.		
	Eros.	★							h	m	s
1	18	17	14.124	14.082	+0.042	10.966	11.057	—0.091	22	6	12
2	15	15	.116	.077	+0.039	.895	10.970	—0.075		11	22
3	20	20	.114	.080	+0.034	.812	.874	—0.062		16	27
4	19	19	.106	.079	+0.027	.731	.778	—0.047		21	46
5	16	17	.100	.075	+0.025	.649	.679	—0.030		25	57
6	21?	22?	.062	.049	+0.013	.939	.942	—0.003		36	12
7	18?	20?	.060	.050	+0.010	.849	.838	+0.011		41	2
8	16	19	.055	.046	+0.009	.758	.733	+0.025		45	27
9	14	18	.050	.047	+0.003	.651	.619	+0.032		49	2
10	10	13	14.046	14.042	+0.004	10.562	10.516	+0.046	22	52	42

The measures of the 6th and 7th exposures are not very satisfactory owing to the coalescent images.

The motion in x , between the 1st and 10th exposures, is $\cdot 038$ in $46^m \cdot 5$ and in y $\cdot 137$, being equivalent to $\cdot 00082$ in x , and $\cdot 00295$ in y for 1^m . If the epoch of nearest approach be adopted as $22^h 37^m 10^s$, the following results are obtained:—

Time of Exposure from Epoch. m	Planet's Motion.	Measured x .	Sum.	Planet's Motion.	Measured y .	Sum.
-31.0	-0.25	+0.42	+0.17	+0.91	-0.91	0.00
-25.8	-0.21	+0.39	+0.18	+0.76	-0.75	+0.01
-20.7	-0.17	+0.34	+0.17	+0.61	-0.62	-0.01
-15.4	-0.13	+0.27	+0.14	+0.45	-0.47	-0.02
-11.2	-0.09	+0.25	+0.16	+0.33	-0.30	+0.03
-1.0	-0.01	+0.13	+0.12	+0.03	-0.03	0.00
+3.9	+0.03	+0.10	+0.13	-0.11	+0.11	0.00
+8.3	+0.07	+0.09	+0.16	-0.24	+0.25	+0.01
+11.9	+0.10	+0.03	+0.13	-0.35	+0.32	-0.03
+15.5	+0.13	+0.04	+0.17	-0.46	+0.46	0.00

[1 unit = $300''$, or $0.001 = 0''.3$.]

This seems to show that the adopted time of nearest approach is very near the actual time.

The position of the star (B.D. $+48^\circ, 759$) for 1900.0 is R.A. $2^h 41^m 26^s \cdot 2$, and Dec. $+48^\circ 51' 22''.8$; this is determined from measures on plate 1632.

The mean measured diameter from the 10 exposures is 16.7 for *Eros* and 18.0 for the star; the star is given as 9.5 in B.D., so *Eros* was slightly fainter, probably 9.7 or 9.8 ; but scarcely so faint as the photographic magnitude assigned by Dr. Millosevich (10.9)—more nearly accordant with his visual magnitude (9.9).

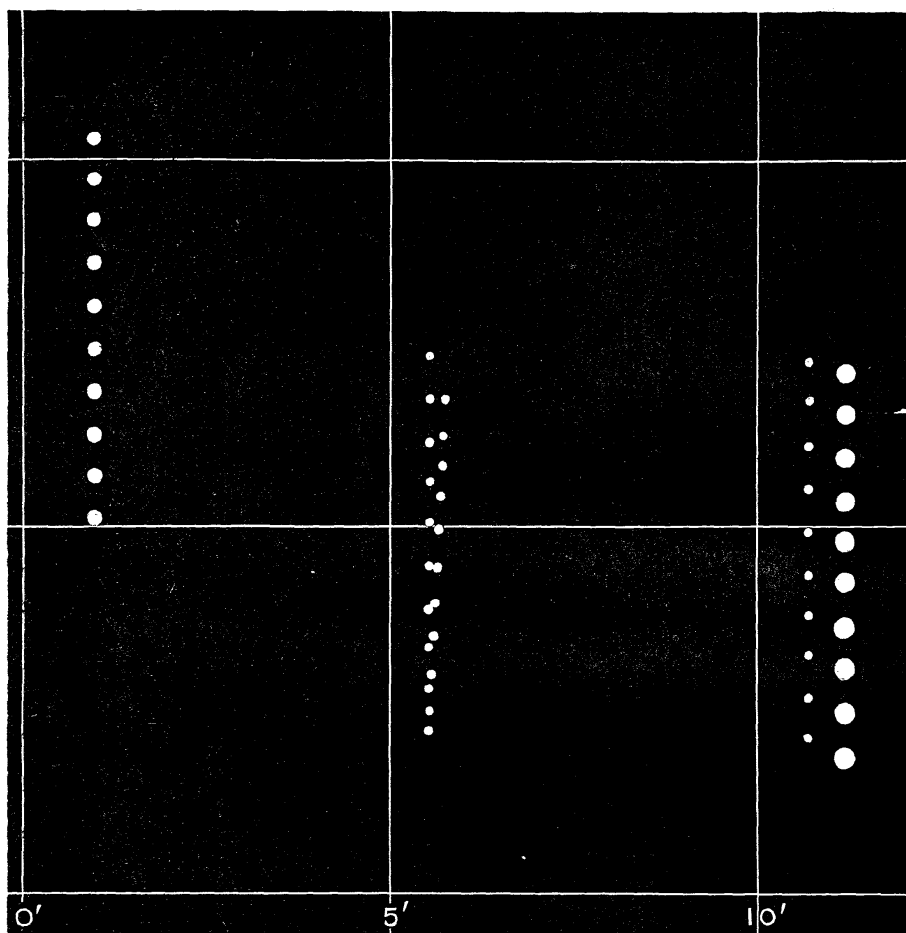
The most accurate ephemeris of the planet yet published is that given by Dr. Millosevich in *Astron. Nachrichten*, Nos. 3660, 3661, 3662. From comparisons with 5 plates the following corrections to this ephemeris have been found, assuming that the R.A. and Dec. given are referred to the true equinox of date.

Date.	Hour Angle.	Correction to Ephemeris.	
1900.	h	s	"
Sept. 19	$4\frac{1}{2}$ East	-0.87	+0.6
Oct. 5	$6\frac{1}{2}$ „	-1.00	+0.8
5	3 West	-0.92	+2.4
12	$4\frac{1}{2}$ East	-1.31	+0.6
15	4 West	-1.30	+0.5
28	5 „	-1.46	+0.2

The reductions are entirely provisional, and may be slightly in error, *e.g.* on Oct. 5, though they have been examined. The

ephemeris published by Mr. Frank Robbins* is accordingly in error in R.A. by about 5^s on Sept. 19 and 14^s on Oct. 28; and in Dec. by about 1'.

Eros is now moving in a part of the sky where there are about 25 stars per square degree† shown on the B.D. charts. The total length of track in the seven months, September to March, is about 70° ; and if we take a width of $5''$ on each side, or $10''$ altogether, the area covered by this path is $70/360$, or 0.2



Eros is the image to the right of the central pair; the first exposure is at the top; motion north and west. Scale $7\frac{1}{2}$ times the original negatives.

square degree, which should thus contain 5 stars. An approach to some star of the B.D. within $5''$ should thus take place about once in 6 weeks on the average. By securing photographs beforehand we could perhaps predict these approaches, which would afford good opportunities for micrometric measures.

* *Monthly Notices*, lx. p. 614.

† See diagram, *Monthly Notices*, lx. Plate 2.

Observations of Jupiter and his Satellites made at Mr. Crossley's Observatory, Bermerside, Halifax, during the Opposition 1899-1900. By Joseph Gledhill.

Owing to the low altitude of the planet and the bad observing conditions prevailing in the winter and spring of 1899-1900 very few observations could be made. On no occasion was the air steady enough for micrometer measures, and it was but seldom that a good view of the planetary details could be obtained. The structure of the North Tropical Belt was never really well seen; and unfortunately the details and changes of this belt have been for some years among the most interesting features of the planet. As in previous papers, the nomenclature used is that of the British Astronomical Association.

It may perhaps be worth noting that in the diagram on p. 45 of vol. ix. of the *Monthly Notices* the band numbered 1 should be single, not double. This band has for some years been a single straplike band.

The 9-inch Equatorial Refractor (photo-visual), by Messrs. Cooke, of York, was the instrument used. No power higher than 240, and that rarely, was ever used.

The Southern South Temperate Band.

This band always appeared a faint one, but on several occasions it was broader than the S. Temperate Band, *e.g.* May 15, 11^h; July 3, 9^h. At 8^{1h} July 26 it was noted as a narrow band. It was never an easy object, and was perhaps never really well seen.

The South Temperate Band.

This is the grey band so often described as *straplike* in previous papers. In some longitudes it appeared faint, in others a fairly strong grey band—*e.g.* it was faint at 10^{1h} May 24, faint and narrow at 9^h July 3, faint at 9^h July 10, and at 8^h July 17; it was narrow and well seen at 8^{1h} July 18, narrow at 8^{1h} July 26 and at 7^h 40^m August 15. It was described as “a well-marked band” at 9^{1h} July 17. In some longitudes it was broad and in others narrow, and the place where it changed from broad to narrow was seen on one or two occasions. The place where it changed from a faint to a darker band was on or near the central meridian at 9^h 5^m July 16, the darker portion being the western.

The South Tropical Belt.

This is the fine, double, dark belt, just S. of the equator. As in many past oppositions, so in this, its N. component has had many dark spots on its N. edge. As in past years, too,

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